ABSTRACT

The present invention aims to realize (1) manufacture of a mesoporous composite powder or thin film composed of nanocrystalline metal oxide – glass having a three-dimensional structure with a large specific surface area, (2) construction of a porous structure framework with nanocrystalline metal oxide crystal and a slight amount of glass phase (SiO_2 or P_2O_5, B_2O_3), (3) control of crystal growth of metal oxide with a slight amount of glass phase (SiO_2 or P_2O_5, B_2O_3), (4) simplification of the manufacturing process, and (5) use thereof in manufacture of a lithium intercalation electric device, photocatalytic device, solar battery and energy storage device. Provided are a nanocrystal oxide – glass mesoporous composite powder or thin film having a three-dimensional structure with regularly arranged mesopores, and a secondary battery comprising the same.